



Project Summary

Texas Department of Transportation

0-5472: A Database for Successful Pavement Sections in Texas - Including Both Experimental and Non-Experimental Pavements

Background

It is commonly said that we learn the most from our mistakes and failures. The Texas Department of Transportation (TxDOT) has taken great efforts over the years to learn from pavements not performing as well as expected. But it is also possible to learn much from successes. The purpose of this research project was to establish and begin a process for TxDOT to learn from Texas flexible pavements that have performed notably beyond expectations. The process to be developed was to include a database where information about these pavements could be stored, searched, and downloaded through a web site interface.

What the Researchers Did

All TxDOT district offices were contacted and asked to nominate flexible pavements which in their judgments had performed beyond expectations for traffic levels and environments. Respondents from 17 districts nominated a total of 75 pavements. Researchers visited each nominated pavement section site, normally accompanied by the nominator. Pavement conditions were visually noted and photographed, and additional information was obtained. Observers discussed unique subgrade conditions, unusual traffic considerations, and any unique aspects of construction and maintenance during these visits.

The research team obtained and evaluated pavement scores from the TxDOT Pavement Management Information System (PMIS) for the prior three years. From the nominated sections, 25 pavements were selected for further analyses, including in-situ pavement testing, coring, laboratory testing, and the evaluation of construction inspection testing records if they were available. All information that could be obtained for these 25 pavements was compared to current specification requirements. Finally, the collected information was loaded into the database through the web site created for this purpose.

An additional activity of this project was to develop a definition of “successful flexible pavement performance.” The research team collected information from experienced department pavement engineers and available literature, and then analyzed pavement scores from department pavement management records. The results of the analyses defined a successful flexible pavement as a structure that has met performance expectations over its service life with only normally expected levels of maintenance for its age, materials utilized, traffic loads, and local conditions. The definition criteria for performance expectations are based on distress scores, condition scores, ride scores, and pavement maintenance expenditures related to the age and level of traffic being carried.

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What They Found

While the success of each pavement appears to have somewhat differing factors involved, in general, superior performance may be attributed to the combined result of good construction practice, high-quality materials, and timely maintenance.

A database with a user-friendly web site interface was created to provide access to detailed information about the 25 selected successful flexible pavements. The web site allows on-line nomination of additional pavements by registered users. The figure below shows the home page, which displays the locations of the 25 pavements, and a typical screen displaying construction-related information. Detailed information about each pavement layer is accessed by clicking on the pavement layer of interest in the cross-section. The web site is located at <http://tsfp.tamu.edu>.

Current record retention policies for construction inspection test results were found to limit comparison of pavement performances older than six or seven years in age to their corresponding construction inspection test results. This limitation significantly reduced the strength of project findings relative to the evaluation of current construction specification requirements. However, potentially valuable observations were made regarding test results and specification criteria that warrant further evaluation.



Web Site Home Page and Typical Informational Screen.

What This Means

The department now possesses a populated database with 25 premium flexible pavement sections and an on-line tool to access this database. The on-line tool can also be used for collecting additional information about particularly successful flexible pavements. The information already available on the web site is a valuable resource to area engineers and district pavement engineers interested in comparing their design practices and typical job control test results to pavements that have performed notably well. When populated with more sections, this database will serve as a powerful means of collecting job control test results for the analyses of statewide construction specification criteria.

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